

I CLAIM:

1. A semiconductor chip module comprising:

a chip-mounting member having opposite first and second surfaces, a set of first circuit traces, and a plurality of plated through holes that extend through said first and second surfaces and that are connected to said first circuit traces;

a first semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon;

a first dielectric tape member for bonding adhesively said first semiconductor chip on said chip-mounting member;

a first conductor unit for connecting electrically said contact pads of said first semiconductor chip and said first circuit traces; and

a plurality of solder balls disposed on one of said first and second surfaces of said chip-mounting member, each of said solder balls being aligned with and being connected to a respective one of said plated through holes in said chip-mounting member.

2. The semiconductor chip module as claimed in Claim 1, wherein:

said first circuit traces and said first semiconductor chip are disposed on a same one of said first and second surfaces of said chip-mounting member;

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5 said first dielectric tape member bonds adhesively said pad mounting surface of said first semiconductor chip on said same one of said first and second surfaces of said chip-mounting member, and is formed with a plurality of holes at positions registered with said contact pads of said first semiconductor chip; and

10 said first conductor unit includes a plurality of conductive contact balls that are received in said holes in said first dielectric tape member to establish electrical connection between said contact pads of said first semiconductor chip and said first circuit traces.

15 3. The semiconductor chip module as claimed in Claim 2, wherein said chip-mounting member further has a set of second circuit traces accessible from the other one of said first and second surfaces opposite to said first circuit traces and connected to said plated through holes; said semiconductor chip module further comprising:

20 a second semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon;

a second dielectric tape member for bonding adhesively said second semiconductor chip on said chip-mounting member; and

25 a second conductor unit for connecting electrically said contact pads of said second semiconductor chip and said second circuit traces.

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4. The semiconductor chip module as claimed in Claim 3, wherein:

said second dielectric tape member bonds adhesively said pad mounting surface of said second semiconductor chip on the other one of said first and second surfaces of said chip-mounting member, and is formed with a plurality of holes at positions registered with said contact pads of said second semiconductor chip; and

said second conductor unit includes a plurality of conductive contact balls that are received in said holes in said second dielectric tape member to establish electrical connection between said contact pads of said second semiconductor chip and said second circuit traces.

5. The semiconductor chip module as claimed in Claim 2, wherein said first semiconductor chip has a peripheral portion that is provided with an epoxy resin layer to strengthen bonding of said first semiconductor chip with said same one of said first and second surfaces of said chip-mounting member.

6. The semiconductor chip module as claimed in Claim 2, wherein said first semiconductor chip has a heat dissipating surface that is opposite to said pad mounting surface and that has a heat dissipating plate secured thereon.

7. The semiconductor chip module as claimed in Claim 1, wherein:

said chip-mounting member has a first chip receiving cavity formed in one of said first and second surfaces thereof, said first chip receiving cavity having an open end and a closed end opposite to said open end, said first circuit traces and said first chip receiving cavity being provided on a same one of said first and second surfaces of said chip-mounting member;

said first semiconductor chip is received in said first chip receiving cavity with said pad mounting surface thereof being accessible from said same one of said first and second surfaces of said chip-mounting member via said open end of said first chip receiving cavity; and

said first conductor unit includes a plurality of conductive wires that interconnect said contact pads of said first semiconductor chip and said first circuit traces.

8. The semiconductor chip module as claimed in Claim 7, wherein said first semiconductor chip has a chip fixing surface opposite to said pad mounting surface, said first dielectric tape member bonding adhesively said chip fixing surface of said first semiconductor chip on said closed end of said first chip receiving cavity.

9. The semiconductor chip module as claimed in Claim 7, wherein said chip-mounting member further has a set of second circuit traces accessible from the other one

of said first and second surfaces opposite to said first circuit traces and connected to said plated through holes, said semiconductor chip module further comprising:

5 a second semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon;

10 a second dielectric tape member for bonding adhesively said second semiconductor chip on said chip-mounting member; and

a second conductor unit for connecting electrically said contact pads of said second semiconductor chip and said second circuit traces.

15 10. The semiconductor chip module as claimed in Claim 9, wherein:

20 said chip-mounting member has a second chip receiving cavity formed in the other one of said first and second surfaces thereof, said second chip receiving cavity having an open end and a closed end opposite to said open end;

25 said second semiconductor chip is received in said second chip receiving cavity with said pad mounting surface thereof being accessible from the other one of said first and second surfaces of said chip-mounting member via said open end of said second chip receiving cavity; and

said second conductor unit includes a plurality of conductive wires that interconnect said contact pads of said second semiconductor chip and said second circuit traces.

5 11. The semiconductor chip module as claimed in Claim 10, wherein said second semiconductor chip has a chip fixing surface opposite to said pad mounting surface, said second dielectric tape member bonding adhesively said chip fixing surface of said second semiconductor chip on said closed end of said second chip receiving cavity.

10 12. The semiconductor chip module as claimed in Claim 7, further comprising an encapsulation layer provided on said same one of said first and second surfaces of said chip-mounting member to enclose said pad mounting surface of said first semiconductor chip and said first conductor unit.

15 13. The semiconductor chip module as claimed in Claim 7, wherein said closed end of said first chip receiving cavity is formed with a set of second circuit traces that are connected to said plated through holes, said first semiconductor chip having a chip fixing surface opposite to said pad mounting surface, said semiconductor chip module further comprising:

20 25 a second semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon, and a chip fixing surface opposite to said pad

mounting surface, said second semiconductor chip being received in said first chip receiving cavity between said first semiconductor chip and said closed end of said first chip receiving cavity;

5 said first dielectric tape member including a first dielectric tape layer for bonding together said chip fixing surfaces of said first and second semiconductor chips, and a second dielectric tape layer for bonding adhesively said pad mounting surface of said second semiconductor chip on said closed end of said first chip receiving cavity, said second dielectric tape layer being formed with a plurality of holes at positions registered with said contact pads of said second semiconductor chip; and

10 a second conductor unit including a plurality of conductive contact balls that are received in said holes in said second dielectric tape layer to establish electrical connection between said contact pads of said second semiconductor chip and said second circuit traces.

15 14. The semiconductor chip module as claimed in Claim 13, wherein said chip-mounting member further has a set of third circuit traces accessible from the other one of said first and second surfaces opposite to said first circuit traces and connected to said plated through holes, said semiconductor chip module further comprising:

a third semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon;

5 a third dielectric tape member for bonding adhesively said third semiconductor chip on said chip-mounting member; and

a third conductor unit for connecting electrically said contact pads of said third semiconductor chip and said third circuit traces.

10 15. The semiconductor chip module as claimed in Claim 1, wherein said first circuit traces are disposed on one of said first and second surfaces of said chip-mounting member, said first dielectric tape member bonding adhesively said pad mounting surface of said
15 first semiconductor chip on the other one of said first and second surfaces of said chip-mounting member, said chip-mounting member being formed with a first opening that extends through said first and second surfaces thereof, said first dielectric tape member being formed
20 with a second opening that is registered with said first opening for access to said contact pads of said first semiconductor chip, said first conductor unit including a plurality of wires that interconnect said contact pads of said first semiconductor chip and said
25 first circuit traces.

16. The semiconductor chip module as claimed in Claim 15, wherein said first semiconductor chip has a

peripheral portion that is provided with an epoxy resin layer to strengthen bonding of said first semiconductor chip with the other one of said first and second surfaces of said chip-mounting member.

5 17. The semiconductor chip module as claimed in Claim 15, wherein said first semiconductor chip has a heat dissipating surface that is opposite to said pad mounting surface and that has a heat dissipating plate secured thereon.

10 18. The semiconductor chip module as claimed in Claim 15, further comprising an encapsulation layer provided on said one of said first and second surfaces of said chip-mounting member to enclose said pad mounting surface of said first semiconductor chip and said first
15 conductor unit.

19. A semiconductor chip module stack, comprising:
upper and lower semiconductor chip modules, each
including:

20 a chip-mounting member having upper and lower surfaces, a set of circuit traces, and a plurality of plated through holes that extend through said upper and lower surfaces and that are connected to said circuit traces,

25 a semiconductor chip having a pad mounting surface with a plurality of contact pads provided thereon,

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a dielectric tape member for bonding adhesively said semiconductor chip on said chip-mounting member,

a conductor unit for connecting electrically said contact pads of said semiconductor chip and said circuit traces, and

a plurality of solder balls disposed on said lower surface of said chip-mounting member, each of said solder balls being aligned with and being connected to a respective one of said plated through holes in said chip-mounting member;

wherein said solder balls of said upper semiconductor chip module are aligned with and are connected to said plated through holes in said chip-mounting member of said lower semiconductor chip module at said upper surface of said chip-mounting member of said lower semiconductor chip module.

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